UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

In re: Elysium Health-ChromaDex Litigation	:	Case No. 1:17-cv-07394 (LJL)

SECOND AMENDED COMPLAINT

Plaintiff ChromaDex, Inc. ("Plaintiff" or "ChromaDex") complains and alleges against Elysium Health, Inc. ("Elysium") as follows for harm caused to ChromaDex as well as New Yorkers at large, who have been willfully deceived and whose health has been placed at risk as a result of Elysium's deceptive and fraudulent business practices.

INTRODUCTION

1. ChromaDex, a publicly traded nutraceutical company founded in 1999, is at the forefront of the development of dietary supplements that improve cellular function and vitality as people age. Its primary products, an ingredient called Niagen® and a consumer product called Tru Niagen®, contain a molecule called nicotinamide riboside ("NR"), which is clinically proven to increase NAD+ levels in human cells and is believed to have important anti-aging effects.

2. ChromaDex has been the industry leader in the science, research, and development of isolated NR as an ingredient in dietary supplements and other products. ChromaDex has, for over 11 years, diligently researched and developed the technology to produce and confirm the safety of NR and has invested millions of dollars in obtaining all required certifications and designations for its products.

3. ChromaDex has expended tremendous time, effort, and money to test its products for efficacy and safety and meet regulatory approval. ChromaDex maintains a state-of-the-art laboratory in Longmont, Colorado and has numerous PhD-level scientists on staff working on NR-

related projects, including ChromaDex's robust quality assurance program for Niagen and Tru Niagen. Further, ChromaDex is the only manufacturer of NR products to have successfully submitted to the FDA two New Dietary Ingredient Notifications ("NDINs") and to have successfully notified the FDA that Niagen has been confirmed to be "generally recognized as safe," or "GRAS," by a panel of independent toxicologists.

4. ChromaDex also actively supports the science related to NR. ChromaDex works with scientists and research institutions on clinical trials of NR products and maintains an active relationship with the scientist whose discoveries revealed the health benefits of NR and led to the development of NR as a health supplement. ChromaDex contracts with leading independent researchers globally and licenses proprietary materials and information related to NR through material transfer agreements. ChromaDex is also the licensee of numerous patents related to NR, including composition-of-matter patents that survived inter partes review requested by Defendant. In fact, every Niagen or Tru Niagen product sold by ChromaDex redounds to the financial benefit of the scientist and research institutions responsible for the NR developments of the last 15+ years.

5. Elysium is a dietary supplement start-up that was founded in 2014. Elysium has one product, Basis®, which contains two active ingredients, including NR and another ingredient called Pterostilbene ("PT"). Elysium specializes in marketing Basis to consumers.

6. For years, ChromaDex was Elysium's sole supplier of NR.

7. Elysium saw the growth and potential of the anti-aging supplements market and wanted complete control over the NR market. It wasn't satisfied with purchasing ingredients from another company and merely processing and packaging those ingredients for sale to the consumer market.

8. Elysium's goal was to own the NR market. When it could not buy ChromaDex, or gain ownership or exclusivity over Niagen, Elysium decided to take control of the market through improper means.

9. As more fully set forth in the litigation between ChromaDex and Elysium pending in the United States District Court for the Central District of California, and summarized below,

Elysium poached ChromaDex's personnel, stole proprietary and confidential information and trade secrets, withheld payment from ChromaDex on nearly $3 million in product while it developed an alternate source for NR, and knocked off ChromaDex's ingredients.

10. However, Elysium lacked the pedigree and track record that ChromaDex had in the dietary supplement and anti-aging space.

11. So, just as it had done with ChromaDex's personnel, proprietary information, and products, Elysium decided to steal ChromaDex's pedigree, rather than investing the time and money to obtain its own bona fides in the anti-aging supplement market.

12. This action describes how Elysium misappropriated every aspect of ChromaDex's pedigree in its marketing materials for the purpose of deceiving consumers about its Basis product. Specifically,

- Elysium falsely claims to be "first" to market and the only supplement clinically proven effective, when ChromaDex's products were first and the clinical study cited by Elysium was actually a study of ChromaDex's products;

- Elysium provides consumers with the false impression that it was materially involved in the research and science behind the ingredients in Basis, when it was not;

- Elysium falsely claimed that the FDA has approved or endorsed Basis, by referring to ChromaDex's NDINs and GRAS submissions to the FDA;

- Elysium falsely represents to consumers that Basis is backed by clinical studies, when both of its completed clinical trials were performed on ingredients provided by ChromaDex—not on the ingredients used in Basis today; and

- Elysium—which, as ChromaDex's customer, claimed to sell a patented product, based on ChromaDex's patents—now claims to be the exclusive licensee to a Harvard and Mayo Clinic patent on the use of NR for "dietary supplement applications in the slowing of aging and age-related diseases." In reality, Elysium's license relates to a patent application for which all of the claims were either abandoned by the inventor or rejected by the U.S. Patent and Trademark Office as obvious and anticipated by prior art.

13. As an example of Elysium's highly deceptive marketing, Elysium, and its co-founder and Chief Scientist Leonard Guarente, frequently state that Elysium's product Basis is the culmination of 25 years of aging research and Guarente's discoveries related to the activation of

certain proteins. What Guarente and Elysium do not tell consumers is that the claimed health benefits of Basis stem from the active ingredient NR, while Guarente's research relates, indirectly, to the other active ingredient in Basis, PT (which has no proven health benefit and creates a serious risk to consumers of increased LDL ("bad") cholesterol). Elysium's marketing campaigns use sleight of hand to make consumers believe that Guarente's research is directly relevant to, and even responsible for, the health benefits of Basis, when in fact, Guarente has no scientific experience with the source of those benefits: NR.

14. Elysium attempts to compensate for the fact that its stolen pedigree is merely smoke and mirrors by stacking its "Scientific Advisory Board" with a blue ribbon panel of eight Nobel laureates and nineteen other scientists and by touting associations with leading institutions and organizations. Unlike ChromaDex's scientific advisors (which have directly relevant experience and aid ChromaDex in advancing the research and development of NR), these scientists and institutions had nothing to do with Basis or the science behind NR. Elysium borrows their credibility to give consumers the false impression that they were involved in the science and discovery behind the Basis product, and vouch for its safety and efficacy.

15. Elysium's commercial persona—as crafted by its marketing and public relations campaigns—consists of its claims that its product is backed by 25 years of scientific experience, headed by a PhD from MIT, and supported by Nobel laureates. As described below, each of these claims is misleading and used by Elysium to successfully deceive consumers about the nature of Elysium as a company and the science behind Basis.

16. Finally, this action describes how Elysium's shortcuts in developing its alternate supply of NR—without having done the leg work of conducting clinical studies for safety and efficacy of its ingredients and gaining regulatory approval—have had serious consequences. These include Elysium's: (a) promotion of phony science in order to boost its sales; (b) false labeling that misrepresents the amount of NR in each Basis capsule; (c) unsubstantiated claims that the PT in Basis can prevent and treat cancer, erase age-related cognitive deficits, and increase human lifespan; (d) failure to inform consumers that its own clinical study established a risk that

the PT in Basis may significantly raise LDL cholesterol ("Bad Cholesterol") and thus create an undisclosed health risk to anyone taking Basis; and (e) failure to inform consumers of high levels of a known carcinogen in Basis.

17. ChromaDex brings this action (a) to protect unsuspecting consumers from taking Elysium's dietary supplement pills, which Elysium deceptively and falsely markets as safe, effective, and based on years of research, comprehensive FDA regulatory approvals, and clinical and quality assurance testing and (b) to recover damages for the harm suffered by ChromaDex as a result of Elysium's improper conduct.

THE PARTIES

18. ChromaDex is a California Corporation with its principal place of business located at 10005 Muirlands Blvd, Suite G, Irvine, California 92618. ChromaDex discovers, acquires, develops, and commercializes patented and proprietary ingredient technologies in the dietary supplement, food, beverage, skin care, and pharmaceutical markets, and is the exclusive licensee of various patent portfolios on ingredient technologies included in its Niagen, Tru Niagen, pTeroPure, PureEnergy, Immulina, and Anthorigin products.

19. Elysium is a Delaware Corporation with its principal place of business located at 434 Broadway, Second Floor, New York, New York 10013.

JURISDICTION AND VENUE

20. This is an action for false advertising and unfair competition arising under the Lanham Act, 15 U.S.C. § 1125(a), and New York state law. Gen. Bus. L. § 349.

21. This Court has original jurisdiction over federal unfair competition and false advertising claims pursuant to 28 U.S.C. §§ 1331, 1338 and 15 U.S.C. § 1121(a).

22. Supplemental jurisdiction is proper for the state law claims under 28 U.S.C. § 1367(a) because that claim is so related to the federal claims that it forms a part of the same case or controversy under Article III of the United States Constitution.

23. Diversity jurisdiction is also conferred upon this Court by 28 U.S.C. § 1332 because the matter in controversy exceeds the sum or value of seventy-five thousand U.S. Dollars ($75,000), exclusive of interest and costs, and involves a Delaware Corporation with its principal place of business in New York and a California Corporation with its principal place of business in California.

24. Venue is proper in the United States District Court for the Southern District of New York under 28 U.S.C. § 1391(b) because: (1) Defendant's tortious conduct has occurred in this district; (2) Defendant conducts regular and systematic business in this district; and (3) a substantial part of the events or omissions giving rise to the claims occurred in this district.

FACTUAL ALLEGATIONS

ChromaDex is the Industry Leader in Quality and Safety of Supplement Products

25. Founded in 1999, ChromaDex is a publicly traded nutraceutical company which discovers, acquires, develops, and commercializes patented and proprietary ingredients in the dietary supplement, food, beverage, skin care, and pharmaceutical markets, and is the exclusive licensee of various patent portfolios on ingredient technologies.

26. In addition to ChromaDex's proprietary ingredient technologies segment, ChromaDex also has a core standards and contract services segment, which provides analytical testing services and regulatory consulting. ChromaDex was quickly recognized as the expert in this space, and became the "gold standard" for safety and quality of dietary supplement products.

27. ChromaDex also has longstanding relationships with leading universities and research institutions. Its proprietary ingredient portfolio is backed by clinical and scientific research, as well as extensive intellectual property protection.

ChromaDex is the Industry Leader in NR Research and Development

28. One of ChromaDex's primary products is an ingredient called Niagen.

29. Niagen comprises nicotinamide riboside ("NR"). NR is a novel form of B3 vitamin metabolite. The body converts NR into Nicotinamide Adenine Dinucleotide ("NAD+"),

which is an essential molecule found in every living cell. NR increases the level of NAD+ in the body, which promotes cellular metabolism, mitochondrial function, and energy production.

30. ChromaDex first became aware of NR in 2006 based on the work of Dr. Charles Brenner, who was then at Dartmouth University.

31. In 2004, Dr. Brenner demonstrated isolated NR to be a vital precursor of NAD+. In 2007, Dr. Brenner's lab discovered a second pathway by which NR is converted to NAD+ and showed that NR can extend the lifespan of yeast cells. NAD+ levels decrease with age, and its increased presence (*i.e.*, through consumption of a dietary supplement) is thought to delay certain effects associated with the aging process. Niagen has been shown to safely and effectively increase NAD+ in human subjects, supported by published research in the October 2016 issue of *Nature Communications*.

32. ChromaDex worked tirelessly to build on research by experts like Dr. Brenner, licensing patents relating to NR's composition from renowned institutions such as Dartmouth, Cornell, Scripps, and Washington University. Based on its significant efforts and investment, ChromaDex developed the first sustainable way to reliably produce NR for testing, observation and, eventually, human consumption as a dietary supplement.

33. Since 2013, ChromaDex has executed over 140 "material transfer agreements" (contracts that govern the transfer of tangible research materials between two organizations, when the recipient intends to use it for his or her own research purposes) with independent scientists and research institutions throughout the world, all relating to studying the safety and efficacy of NR. Many of these findings have been published in highly prestigious, peer-reviewed scientific journals, such as *Nature*, *Science*, and *Cell Metabolism*. Through its patent licenses and material transfer agreements, ChromaDex financially supports the community of scientists and institutions responsible for the important scientific developments of NR.

34. ChromaDex also conducts research and development related to NR through its own scientists at its laboratory in Colorado.

ChromaDex's Niagen and Tru Niagen Products

35. ChromaDex launched Niagen in May 2013, marking the first time NR was ever commercially available at a scale allowing production of consumer products.

36. In June of 2016, a company called HealthSpan launched a consumer product called Tru Niagen, which contained one active ingredient—ChromaDex's Niagen. ChromaDex acquired HealthSpan in 2017 and Tru Niagen became its first supplement product containing NR for sale directly to consumers.

37. As a result of their high quality, safety, and effectiveness, ChromaDex's Niagen and Tru Niagen products have been well-received in the marketplace. Their success is attributable to ChromaDex's significant investment in research and testing relating to the development, production, and safety of NR.

ChromaDex's Niagen and Tru Niagen Products Meet Rigorous Requirements Imposed by the FDA

38. ChromaDex has, for over 11 years, diligently researched and developed the technology to produce and confirm the safety of NR and has invested millions of dollars in obtaining all required certifications and designations for its products.

39. ChromaDex manufactures Niagen and Tru Niagen in accordance with current good manufacturing practices (or "cGMP"), as prescribed by the FDA. Further, the Federal Food, Drug, and Cosmetic Act and Dietary Supplement Health Education Act requires that manufacturers and distributors who wish to market dietary supplements that contain a "new dietary ingredient" (an ingredient which was not marketed in the United States prior to 1994) must notify the FDA about the new ingredient by filing a New Dietary Ingredient Notification ("NDIN").

40. On or about August 20, 2015, ChromaDex submitted an NDIN for approval to the FDA for its Niagen product ("NDIN 882"). The FDA accepted NDIN 882 on November 3, 2015, which recognized that ChromaDex had defined the identity of, and manufacturing process for, commercial NR in accordance with the FDA's standards. **Exhibit A**.

41. Niagen conforms to NDIN 882 and was subject to a comprehensive toxicology program that included Geno toxicity and mutagenicity studies, acute toxicity, a 14-day dose range finding study, sub-chronic toxicity, and a human study. These studies were conducted in accordance with good laboratory practices ("GLP") as well as preclinical studies following accepted protocols.

42. On or about December 27, 2017, ChromaDex submitted a second NDIN for Niagen that revised the recommended dose of Niagen from no more than 180 mg per day to no more than 300 mg per day ("NDIN 1062"). The FDA accepted NDIN 1062 on March 7, 2018.

43. Niagen is the only NR ingredient in the marketplace with an NDIN.

44. Furthermore, on December 21, 2015, ChromaDex successfully notified the FDA that Niagen was confirmed to be Generally Recognized as Safe, after ChromaDex submitted a dossier of information relating to Niagen to a panel of independent experts in toxicology for review. The FDA allows ingredient manufactures to "self-affirm" GRAS findings, without submitting those findings to the FDA. ChromaDex, however, took the additional voluntary step of submitting the Niagen GRAS finding to the FDA, on March 8, 2016. **Exhibit B**.

45. ChromaDex, through its scientists at its Colorado laboratory, employs an ongoing, comprehensive quality assurance program that ensures all of its commercially available NR conforms to the specifications as defined in NDIN 882 and NDIN 1062, thereby assuring consumers and regulators alike that all Niagen sold in commerce is safe for consumption.

Elysium and Basis

46. Elysium is a dietary supplement start-up that was founded in 2014.

47. Elysium has one product, Basis. The only two active ingredients in Basis are NR (250 mg) and PT (50 mg). *See* **Exhibit C**. Elysium specializes in marketing Basis to consumers.

48. For years, ChromaDex was Elysium's sole supplier of these ingredients. ChromaDex supplied Elysium with its Niagen ingredient, as well as with pTeroPure, a separate proprietary health ingredient comprised of PT.

49. ChromaDex sold—and Elysium promised to buy and pay for—Niagen and pTeroPure pursuant to three contracts: (1) the Niagen Supply Agreement, dated February 3, 2014, as amended February 19, 2016; (2) the pTeroPure Supply Agreement, dated June 26, 2014 (together, the "Supply Agreements"); and (3) a Trademark License and Royalty Agreement, dated February 3, 2014.

Elysium Reveals its Ambition of Controlling the NR Market

50. When Elysium and ChromaDex first began negotiations for the supply of NR, Elysium demanded a sublicense to ChromaDex's NR patent rights, which would have granted Elysium control over the production of NR. ChromaDex declined to provide any NR patent rights to Elysium (which, at the time, was a pre-revenue start-up with no products on the market and no track record). This left Elysium with a trusted supply of NR from ChromaDex, but no ownership or intellectual property rights.

51. Elysium repeatedly sought the exclusive right to sell products containing NR from ChromaDex. ChromaDex, which had several other customers who purchased Niagen from it, never agreed to provide Elysium with complete exclusivity.

52. In 2015, Elysium's co-founder Dr. Leonard Guarente revealed to ChromaDex Board Member Rob Fried that it was Elysium's intention to purchase ChromaDex outright, presumably to corner the NR market and obviate the need for a supplier relationship. ChromaDex rebuffed Elysium's advances. Elysium grew increasingly frustrated. Since 2015, Elysium has conspired to take control of the NR market by taking ChromaDex's personnel, proprietary information, and products, as well as its pedigree and track record of producing scientifically-supported, high-quality supplements.

Elysium Conspired to Wrest Control of the NR Market from ChromaDex

53. Elysium saw the growth and potential of the anti-aging supplements market and wanted complete control over the NR market. It wasn't satisfied with purchasing ingredients from another company and processing and packaging those ingredients for sale to the consumer market.

54. Accordingly, in 2015 and 2016, Elysium conceived of a plan to steal ChromaDex's personnel, proprietary information, products, and pedigree and to wrest control of the NR market through improper means.

55. As more fully set forth in the litigation between ChromaDex and Elysium pending in the United States District Court for the Central District of California (Index No. SAVC 16-02277, the "California Litigation"), Elysium carried out its plan through multiple carefully crafted steps in 2016 and 2017. These steps include the following acts by Elysium:

(a) In early 2016, Elysium began recruiting ChromaDex's Vice President of Business Development, Mark Morris. Elysium induced Morris to breach his contractual and fiduciary obligations to ChromaDex with offers of employment, in exchange for his commitment to act as Elysium's inside agent before he terminated his employment with ChromaDex. In May 2016, Morris began feeding Elysium confidential and proprietary information on ChromaDex's sales to other customers, including detailed and comprehensive documents and information about ChromaDex's business that allowed Elysium to learn the exact prices and volumes of Niagen that Elysium's competitors were purchasing as well as their purchasing trends and strategic business decisions.

(b) Elysium and Morris further agreed to trick ChromaDex into providing Elysium with a huge stockpile of ingredients for Elysium to sell while they utilized ChromaDex's proprietary and confidential information to develop an alternate source of NR for Elysium. After Elysium submitted two extraordinarily large purchase orders for Niagen and pTeroPure, on June 28, 2016, at less than half the parties' agreed price, Morris facilitated a call between Elysium and ChromaDex management to discuss the orders. On the call, Elysium's management falsely stated that Elysium intended to be a good business partner to ChromaDex and explained that Elysium was ramping up, which was the reason the June 28 orders were far larger than their past orders.

(c) In reliance on Elysium's statements and promises, ChromaDex agreed to a discounted price for Niagen, accepted $2.95 million in purchase orders from Elysium on June 30, 2016, and filled the orders on July 1, 2016 and August 9, 2016.

(d) The *day* after ChromaDex completed its fulfillment of those orders (August 10, 2016), Elysium falsely accused ChromaDex of violating the parties' supply agreement and refused to pay ChromaDex the $2.95 million balance for the orders it placed on June 30 and *had already received*. To date, Elysium has not paid anything to ChromaDex for the ingredients, which Elysium used to produce Basis capsules that it sold to consumers for millions of dollars.

(e) Before Morris left ChromaDex, he used his personal email account to send Elysium a list of manufacturers who could potentially produce NR for Elysium. He also attached a ChromaDex document that described the manufacturing process for NR. Morris also saved copies of several ChromaDex documents, some containing trade secret, confidential and/or proprietary information, with the intent of using that stolen information for Elysium's purposes.

(f) Morris also helped recruit another ChromaDex employee, Ryan Dellinger, ChromaDex's Director of Scientific Affairs. On July 15, 2016, Morris ended his nine-year tenure at ChromaDex with only one week's notice and began working at Elysium as its Head of Scientific Technology immediately thereafter. Dellinger resigned *effective immediately* on August 10, 2016—the same day Elysium notified ChromaDex that it refused to pay its past due invoices, and immediately began working at Elysium.

(g) At Elysium, Morris began working with a third-party manufacturer to develop a new commercial supply of NR, independent of ChromaDex. Morris wrongfully utilized proprietary ChromaDex documents and information—some that he stole when he left the employ of ChromaDex and others that Elysium had received from ChromaDex in trust and under non-disclosure agreements obligating Elysium not to misuse them—to guide Elysium's new manufacturer in the development of the new NR supply.

(h) Elysium's unlawful and reprehensible conduct allowed it to do in nine months what it took ChromaDex several years to do, and for a fraction of the cost.

Elysium Steals ChromaDex's Personnel, Proprietary Information, Products, *and Pedigree*

56. Elysium's goal was to own the NR market. When it could not buy ChromaDex, or gain ownership or exclusivity over Niagen, Elysium decided to take the market through improper means.

57. Elysium poached ChromaDex's personnel, stole proprietary and confidential information and trade secrets, withheld payment from ChromaDex on nearly $3 million in product while it developed an alternate source, and knocked off ChromaDex's ingredients.

58. However, Elysium lacked the pedigree and track record that ChromaDex had in the dietary supplement and anti-aging space. Having a robust pedigree is absolutely critical to effectively marketing an anti-aging supplement. Isolated NR is a novel form of vitamin B3 discovered by Dr. Brenner in 2004. Consumers need to be educated about the science behind the product and feel confident that it has been adequately tested for safety and efficacy. Elysium understands this well. For example, Elysium's homepage mentions science seven times and cites clinical data twice. **Exhibit D**. Many of Elysium's featured testimonials also cite "the science" as a primary reason for taking Basis. *See, e.g.*, **Exhibit E**.

59. ChromaDex was the first to commercialize NR, was heavily involved in the scientific advancement of NR, spent years developing and perfecting Niagen and Tru Niagen, expended tremendous time, effort, and money to test its products and meet regulatory approval, and collaborated with independent scientists and research institutions on clinical trials establishing the safety and efficacy of its products.

60. Elysium could not truthfully claim to have any pedigree in the development of NR or anti-aging science.

61. So, just as it had done with ChromaDex's personnel, proprietary information, and products, Elysium decided to steal ChromaDex's pedigree, rather than investing the time and money to obtain its own bona fides in the anti-aging supplement market.

62. Without overstatement, Elysium's marketing materials for Basis read as if they are referring to ChromaDex and its products. These materials are false and misleading and are

intended to deceive, and did deceive, consumers about Elysium and Basis. This false and misleading information is relevant and material to consumers and likely to influence consumers' purchasing decisions.

63. Elysium has misappropriated every aspect of ChromaDex's pedigree, causing ChromaDex significant injury, including declining sales, loss of goodwill, and damage to ChromaDex's brand. Elysium portrays itself to the public as the first and only science-based company offering an NR health product, which its scientists helped develop, when in fact, Elysium's claims, and entire commercial persona, lack authenticity and truth. For example:

(a) ***Elysium claims to be "first" to market and the only supplement clinically proven effective.***

(i) Elysium falsely refers to Basis as "the world's first cellular health product informed by genomics," **Exhibit F**, and the "first product out there, available now, that comes out of basic rigorous research on aging."[1] Further, Elysium claims that Basis is the "only supplement proven to increase and sustain NAD+ levels in humans." **Exhibit D**.

(ii) In fact, ChromaDex's Niagen and pTeroPure came first and Tru Niagen is clinically proven to increase NAD+ levels in humans. Upon information and belief, the clinical trials often cited by Elysium were actually performed on NR and PT produced by ChromaDex and sold to Elysium—not the NR or PT currently used in Basis.

(b) ***Elysium misrepresents its involvement in the research and science behind Basis.***

(i) Elysium's website and marketing materials are littered with statements intended to provide consumers with the false impression that Elysium was materially involved in, and responsible for, the research and science behind the ingredients in Basis.

[1] Statement made by Dr. Leonard Guarente, Elysium's Chief Scientist and co-founder, during promotional interview, *available at* https://www.wkyc.com/article/entertainment/television/liveonlakeside/laurie-jennings-dr-leonard-guarente-new-year-new-you-start-2019-off-right-by-taking-control-of-your-health/95-65bb25ba-bd1e-40e8-9f89-402015056f86 (time stamp 1:45).

(ii) For example, Elysium states on its website that Basis is "[t]he culmination of more than 25 years of aging research," that "Elysium turns critical scientific advancements in aging research into health solutions you can access today," and it encourages consumers to "take a tour of the science and history that led to Basis." **Exhibits D**, **G**. Elysium's co-founder, Chief Scientist, and Chief Scientific Spokesperson, Dr. Leonard Guarente, made (and continues to make) similar claims.

(iii) In an interview with *Allure* magazine, published on October 18, 2017, Dr. Guarente states: "With regard to Basis, the pill seems simple, but the amount of science behind it is quite extensive." **Exhibit H**. Guarente further states that the science surrounding NR "began almost 30 years ago."

(iv) In a recent social media post, Guarente is quoted as saying that "Basis is revolutionary because it's the first product to come out of really good aging research." **Exhibit I**. Guarente's statement is accompanied by a graphic and caption indicating the importance of his research on "sirtuin" proteins. *Id.*

(v) All of these statements are calculated to lead consumers to falsely believe that Guarente and Elysium are the originators and primary contributors to this body of research and that the Basis product offers superior benefits because Elysium was so heavily involved in the science behind NR.

(vi) To put this in context, all of the scientifically-proven health benefits from Basis come from the ingredient NR, while Guarente's experience, including his research on "sirtuins," relates, indirectly, to the other ingredient in Basis, PT. (Guarente's research actually involved a different ingredient entirely, resveratrol, which has never been shown to have benefits to humans in clinical trials.)

(vii) Elysium and Guarente were not involved with, and did not contribute to, the science and research referenced by Elysium relating to NR. That research was conducted, in large part, by Dr. Brenner and ChromaDex's own scientists, engaged in research and

development of ChromaDex's products. The science and research conducted on NR is not even applicable to Basis today because Basis is made by Elysium and not sourced from ChromaDex.

(viii) Elysium conflates Guarente's research (which was entirely unrelated to NR) with the health benefits of NR, for the purposes of making consumers believe that Basis is supported by Guarente's own research and scientific experience.

(ix) Further, Guarente, holds himself out to the public as an "expert" in aging science and someone who can speak with authority in this field. However, when viewed objectively, Guarente's reliability is suspect.

(x) Guarente has published several papers related to anti-aging. Remarkably, two of those papers have been retracted and another has been subjected to a "mega-correction" as characterized by research watchdog Retraction Watch. **Exhibit J**. It is highly unusual in any scientific career that a single paper is retracted, but beyond experience that a scientific "expert" has had three of his papers on the subject attacked and undermined to the point of requiring "mega-corrections" and full retraction.

(xi) Guarente is part of Elysium's thin veneer of scientific credibility that fuels its marketing and public-relations machine. *See, e.g.*, **Exhibit E** (citing Elysium's connection to "MIT scientist" as reason for taking Basis). Elysium passes off Guarente's background as relevant, when it's not, and Elysium thereby intentionally deprives consumers of the ability to evaluate the reliability of Elysium's marketing or place it in context, considering Guarente's irrelevant qualifications and history of failed and retracted research and dubious scientific credentials.

(c) ***Elysium falsely claims that the FDA has approved or endorsed Basis.***

(i) Elysium's deceptive marketing materials lead consumers to mistakenly believe that the FDA has given its blessing to Basis. It does this by (1) touting regulatory certifications and approvals obtained by ChromaDex relating to Niagen and pTeroPure, as if they were obtained by Elysium for Basis, and (2) repeatedly referencing FDA

requirements in its marketing materials. In fact, the FDA has never recognized Basis as GRAS and none of the ingredients in Basis are covered by an NDIN.

(ii) In the "Our Approach" and "How We're Different" sections of Elysium's website, Elysium claimed that "during the course of manufacturing Basis there are a total of five quality and purity audits before a batch is shipped." **Exhibit K**. These statements misled consumers into believing that the FDA had, to some extent, approved of Basis or its ingredients.

(iii) However, upon information and belief, Elysium knowingly shipped product that did not meet its own specifications and does not conduct the testing it claims to do. Elysium's statements are based on *ChromaDex's* efforts to conduct extensive testing and comply with regulations, even though ChromaDex's research, testing, and validation processes no longer have any applicability to Basis. Elysium's statements are intended to deceive the public and misrepresent crucial facts about the safety, efficacy, and testing of Basis.

(iv) Elysium further misrepresents Basis as complying with FDA guidelines by stating on its website that: "We conduct rigorous safety studies for new dietary ingredient (NDI) submissions to the FDA. The Federal Food, Drug, and Cosmetic Act (FD&C) requires that we submit studies to demonstrate the safety of 'new dietary ingredients.'" **Exhibit K**. Upon information and belief, this representation, again, is false.

(v) Elysium's repeated references to the FDA are carefully crafted to deceive consumers into believing that Elysium's supplements meet governmental standards designed to protect them.

(vi) Elysium makes similar statements on its *Endpoints* blog site. In a June 6, 2017 *Endpoints* post, Elysium provides consumers with detailed information regarding the FDA's premarket approval process for dietary supplements for the sole purpose of giving consumers the impression that Elysium has complied with those requirements, when in fact it has not. The post states: "If a supplement maker introduces a new ingredient to the market it's supposed to notify the FDA." **Exhibit L**. Without citation, Elysium further states: "[w]hen

DSHEA (Dietary Supplement Health and Education Act of 1994) was passed . . . there were roughly 4,000 products on the market; today there are more than 77,000, so needless to say there have also been many new ingredients introduced as well. Part of the reason the FDA issued its latest guidance in 2016, by its own admission, is that compliance with the NDI notification process has been inconsistent. The FDA hopes to get more notifications of NDIs submitted, thereby avoiding companies simply introducing new and potentially unsafe ingredients into the consumer market." *Id.* This post leaves consumers with the false impression that Elysium cares about and complies with all applicable FDA requirements.

(d) ***Elysium falsely represents to consumers that Basis is backed by clinical studies.***

(i) Since 2016, Elysium advertises to consumers that Basis is backed by one or more clinical trials which establish the supplement's claimed health benefits. *See, e.g.*, **Exhibits D**, **G**, **M**. However, Elysium's clinical trials were conducted on ingredients sold to Elysium by ChromaDex—not on ingredients currently used in Basis. Elysium's website and advertisements omit this crucial fact and intentionally provide consumers with the false impression that its clinical trials were conducted on the same ingredients in Basis today.

(ii) Elysium aggressively markets Basis as the first and only "Clinically-Proven NAD+ Supplement." On its website, Elysium promotes the results of its "first clinical trial" and proclaims that "[o]ur double-blind, randomized, placebo-controlled clinical trial, published in November 2017 in the peer-reviewed journal Nature Partner Journals: Aging and Mechanisms of Disease, demonstrated that Basis is proven to increase NAD+ levels by an average of 40 percent in adults taking the recommended daily dose." **Exhibit N**.

(iii) At the time this trial was conducted, in 2016, Elysium was sourcing its ingredients from ChromaDex. However, by the time the trial results were published, in November 2017, Elysium was sourcing its ingredients from other suppliers. Elysium fails to disclose this crucial fact to consumers, and deceptively promotes its clinical trial as applicable to Basis, when it is not.

(iv) In an author correction to the trial results, published in August 2018, Elysium takes the additional step of affirmatively misrepresenting the source of the ingredients used in the study as "Elysium Health (New York, NY)." In doing so, Elysium compounds its deception and further misleads consumers regarding the applicability of the clinical trial to Basis.

(v) Similarly, upon information and belief, its second clinical trial, which completed in June 2017, also utilized ingredients provided by ChromaDex. This trial studies the use of NR and PT with patients suffering from ALS. Elysium makes no mention of this in its trial results or related marketing materials and affirmatively misrepresents the source of the ingredients used in the study as "Elysium Health, Inc., NY (USA)."

(e) ***Elysium falsely represents to consumers that it is the exclusive licensee of a patent for the use of NR for the slowing of aging***.

(i) ChromaDex is the exclusive licensee of numerous patents related to NR, including patents covering the composition-of-matter and "crystal morphology," or atomic structure, of isolated NR (Nos. 8,197,807 and 8,383,086)—the most important patents one can hold for a compound.

(ii) On August 16, 2018, Elysium announced that it had entered into an exclusive license agreement with the Mayo Clinic and Harvard University related to the uses of NR:

> Elysium Health, Inc.,™ a life sciences company developing clinically validated health products based on aging research, has entered into an exclusive license agreement with Mayo Clinic and Harvard University to use nicotinamide riboside for dietary supplement applications in the slowing of aging and age-related diseases. . . . 'With this license . . . we are excited to build upon Elysium Health's intellectual property portfolio to support our leading research position in the field of aging.'
>
> **Exhibit O**.

(iii) Elysium's announcement is intended to make consumers believe that Elysium is the exclusive licensee of a patent obtained by Harvard and the Mayo Clinic and is now

the only party that can sell NR supplements for use in connection with aging or age-related diseases. Exclusive access to such a patent, and from such preeminent institutions, would be highly material to consumers.

(iv) In reality, Elysium has licensed a patent application—not an issued patent. Moreover, by the time of Elysium's announcement, all of the claims in this patent application had either been abandoned by the inventor or rejected by the U.S. Patent and Trademark Office as obvious or anticipated by prior art.

(v) Elysium's "license" is nothing more than sophistry, intended to further its efforts to steal ChromaDex's pedigree and create the appearance of integrity, authenticity, and scientific credibility.

Elysium Further Deceives the Public By Stacking its "Scientific Advisory Board" with Uninvolved Nobel Laureates

64. Elysium attempts to compensate for the fact that its stolen pedigree is merely a thin veneer of scientific credibility by stacking its "Scientific Advisory Board" with a blue ribbon panel of Nobel laureates. Although these scientists had nothing to do with Basis or the science behind NR, Elysium claims that it "[w]ork[s] in partnership with the world's leading scientists and research universities, [in] creating a fundamentally new approach to healthcare and the way we age." **Exhibit P**. Elysium pays many of these scientists to sit on its advisory board to give consumers the false impression that these scientists were involved in the science and discovery behind the Basis product, were active in research and development at Elysium, and can vouch for Basis' safety and efficacy.

65. In marketing materials for Basis, Elysium tells consumers, "Our board guides the scientific direction of Elysium. Its members are leaders in science and technology, pioneering a better approach to health." **Exhibit Q**. Such members include Dr. Aaron Ciechanover from the Cancer Biology department at Technion Israel Institute of Technology, Dr. Eric Kandel, from Columbia University, Dr. Jack Szostak, from Harvard University, Dr. Martin Karplus from Harvard University, Sir Richard Roberts from New England Biolabs, Dr. Thomas Südhof from

Stanford University, Dr. Paul Modrich from Duke University School of Medicine, and Dr. Daniel Kahneman, from Princeton University. *Id.*

66. Elysium further stamps the seal of approval on Basis by referencing other luminary members of its Scientific Advisory Board, including Dr. Martin Blaser of New York University, Dr. George Church from Harvard University, Dr. Ana Maria Cuervo of Einstein College of Medicine, Dr. Mark Gerstein of Yale University, Dr. Richard Granstein of Weill Cornell Medical College, Dr. Leroy Hood of the Institute for Systems Biology, Dr. Stuart Kim of Stanford University, Dr. Jim Kirkland of the Mayo Clinic, Dr. Bruce McEwen of The Rockefeller University, Dr. David Moore of Baylor College of Medicine, Dr. Dariush Mozaffarian of Tufts University, Bijan Salehiazdeh of NaviMed Capital and Dr. Eric Schadt of the Icahn School of Medicine. *Id.*

67. In fact, Elysium's webpage includes smiling pictures, reports, and links to articles by some of these scientists, including Dr. Jeff Koons, Dr. Eric Kandel, and Dr. Jack Szostak, regarding topics like Nobel Prize winning medical research on telomeres and George Church's TEDMED talk about genome mapping. *Id.*

68. The implied endorsement of Basis by a myriad of medical professionals, eight Nobel laureates, and at least nineteen scientific luminaries in unrelated fields to NR and cellular energy is a bald attempt to convince consumers to accept Elysium's claims of safety wholesale. *None* of these individuals are identified as having participated in any actual research, development or testing of the Basis product, *id.*, and, on information and belief, not *one* has publicly made any statement endorsing or validating the safety or any other characteristic of Basis, yet their prominence on Elysium's website clearly implies their endorsement of the company and its products as safe for human consumption. In fact, the website listing these individuals is accompanied by a prominently located and displayed "BUY NOW" button, encouraging customers to purchase Basis immediately after learning that these renowned medical researchers and doctors are on Elysium's board. *Id.* Upon information and belief, the identified scientists are

paid fees and compensation for their "services" to Elysium which, in reality, amounts to an implied endorsement of the safety and efficacy of Basis.

69. Elysium recently added two new members to its Scientific Advisory Board, including a psychology professor and a doctor leading an organization involved with access to healthcare for disadvantaged communities. The addition of these members—who lack any experience relevant to Basis—underscores how Elysium's Scientific Advisory Board is nothing more than a showpiece intended to deceive consumers about the testing, safety, and efficacy of Basis.

70. Elysium's marketing campaigns effectively hide from consumers that it played no role in the scientific development of NR, employs no scientists with any experience related to NR, upon information and belief, employs only one person with a PhD—its co-founder and Chief Scientific Spokesperson, Dr. Guarente—and, upon information and belief, does not maintain its own laboratory.

71. Elysium compounds its deceptive information by also including client testimonials, emphasizing their reliance on the alleged scientific foundation of Basis, and their comfort level afforded by Elysium's bevy of apparent sponsors from medical and scientific fields.

72. Elysium's website clearly demonstrates that Elysium wants customers to draw these conclusions and make purchasing decisions based on them. For example, Pamela Olin, who is described as an "annual subscriber" for a supply of Basis, is quoted as saying: "I liked the fact that Elysium has scientists on staff. I liked the fact that there is data . . . . *It just seemed like two simple ingredients*. The fact that there are *so many knowledgeable people* involved in this, and that you were so responsive when I had questions. It left me feeling secure in the knowledge that I was given and made it worth a shot. I'm thoroughly enjoying it." **Exhibit R** (emphases added).

73. Another customer, Suzy Oo, is quoted as saying: "I was following Dr. Guarente's work actually. Scientists have their groupies—I guess I was one of his. He's kind of a rockstar in the scientific community . . . . I went through the original research papers. I looked at it as a hypothesis. Based on what's out there, is it likely to work and is it going to cause me any harm?

Based on everything I read I didn't think it was going to cause me any harm, and based on the literature I thought Basis made sense." **Exhibit S**.

74. As another representative example, another consumer, Tom Flynn, is quoted as saying: "I came across an article about Elysium. I said, let me look at this because of the credibility of the founder and his work at MIT. I was buoyed by the idea that these people had confidence in the research and were proficient in it." **Exhibit T**.

75. Not surprisingly, placed below each "testimonial" is a "Subscribe Today" button by which a consumer can purchase annual supplies of Basis, consistent with Elysium's sales pitch to take two pills per day, forever. *See, e.g.*, *id.*

Elysium Falsely Implies Product Safety by Associating with Renowned Institutions

76. Similarly, Elysium touts its research collaboration and partnerships with renowned academic institutions to further deceive consumers about the science and testing behind Basis. These institutions include MIT, the University of Cambridge, Harvard University, and the University of Oxford.

77. Although none of these institutions participated in the production or testing of the Basis product, their prominence on Elysium's website acts as an implied endorsement of Elysium and the safety and efficacy of Basis, when no actual endorsement exists. These relationships and affiliations matter to consumers and are likely to influence consumers' purchasing decisions. *See, e.g.*, **Exhibit E**.

Elysium's Shortcuts in Development and Testing of Basis Has Serious Consequences for Consumers

78. As described above, Elysium developed its alternate supply of ingredients without having done the hard work of advancing the science behind NR, conducting clinical studies for safety and efficacy, and gaining regulatory approval. These shortcuts, however, have had serious consequences for consumers. These include the promotion of faulty science by Elysium, the misrepresentation of the amount of NR in Basis capsules, the making of unsubstantiated disease prevention, cognitive benefit, and longevity claims, and the advertising of Basis as unreservedly

safe for consumers despite the inclusion of PT without warning—which Elysium's own research has shown creates a risk of substantially raising Bad Cholesterol in consumers.

79. Importantly, as explained in detail below, while Elysium was advertising the effect of PT in Basis in treating cancer, expanding lifespan, and improving cognition (all either unsupported or blatantly false), Elysium was pushing its manufacturer to shortcut the manufacturing process. That decision led to the sale of Basis to consumers with high levels of acetamide, a known carcinogen.

Elysium Relies on Faulty Science in Marketing Basis

80. Elysium's marketing and advertising materials are littered with references to scientific claims and explanations which are based on invalid and inapplicable science.

81. Elysium claims that Basis is the "culmination of more than 25 years of aging research." *See, e.g.*, **Exhibit G**. Furthermore, Elysium promotes Guarente as an anti-aging expert that made critical scientific discoveries in his MIT lab which were material to the development of Basis. *See, e.g.*, **Exhibit J**.

82. These claims are false on their face, as NR supplements are the product of Dr. Brenner's research and have nothing to do with Dr. Guarente's research. Elysium and Guarente were not involved with, and did not contribute to, the science and research referenced by Elysium relating to NR.

83. Dr. Guarente's anti-aging experience relates entirely (and indirectly) to PT. His experience comes from his work with "sirtuin" activation and a compound called resveratrol. Elysium claims that PT is substantially similar to resveratrol and that resveratrol and, by extension, PT, activates sirtuins in humans, causing anti-aging effects. However, the connection between PT and resveratrol is entirely unsubstantiated and the science behind resveratrol has been largely discredited.

84. Resveratrol is a compound found naturally in grapes, berries, and peanuts. Some scientists, including Guarente, hypothesized that resveratrol activates "longevity genes" called sirtuins in humans thereby causing anti-aging effects. Although resveratrol had positive effects in

mice and yeast, scientific research has not borne out claims that resveratrol activates sirtuins, or has any anti-aging effects, in humans. Studies published in 2009 and 2010 by scientists from major pharmaceutical companies cast serious doubt on whether resveratrol activates sirtuins and showed that the sirtuin activity was caused by something else present in experiments. And in 2010, GlaxoSmithKline terminated development on a resveratrol formulation it had paid more than $700 million to acquire because it failed to activate sirtuins and, at some doses, actually inhibited sirtuins.

85. Elysium claims that PT in Basis "activates your sirtuins, also known as the 'guardians of the genome'" which "help regulate your cellular health and play a role in aging." **Exhibits G**, **U**.

86. These claims, and other similar claims by Elysium, contain numerous inaccuracies and misrepresentations which are intended to deceive consumers about the science behind Basis. First, upon information and belief, Elysium's claims are based entirely on hypotheses and theories related to resveratrol, not PT. Second, Elysium relies on research relating to resveratrol without a scientific basis for drawing a connection between resveratrol and PT and without disclosing to consumers its assumptions regarding the relationship of those compounds. Finally, Elysium ignores all of the research and data that shows that resveratrol likely does not activate sirtuins in humans. Instead, Elysium represents its unsubstantiated theories as clinically proven facts.

87. Elysium disseminates its faulty scientific claims through its website and its prolific public relations campaigns. For example, Elysium, Guarente, and the faulty science discussed above were recently profiled by *Good Housekeeping*, a respected and trusted national magazine, through its electronic and print publications, and affiliations and connections with local news networks. **Exhibits Q**, **U**, **V**. Through deceptive means, Elysium caused *Good Housekeeping* to endorse Basis and to help Elysium promote the "scientific rigor" behind Basis. **Exhibit V**.

88. In addition, Elysium has repeatedly misrepresented that Basis is more effective than its competitors because its active ingredients NR and PT combine to produce a synergistic effect that is greater than their sum.

89. In the context of dietary supplements, a synergistic effect is a term of art that refers to the combined effect of individual ingredients; the synergistic effect of two ingredients combined is greater than the sum of the individual ingredients.

90. Elysium boasts that the combination of NR and PT in Basis has a beneficial, synergistic effect without, on information and belief, having conducted any testing or having any other support.

91. For example, on its website, Elysium states that "[t]he proprietary formulation of nicotinamide riboside and pterostilbene is designed to increase levels of the coenzyme NAD+ and to support a class of proteins called sirtuins. NAD+ and sirtuins work together in vital cellular processes including energy production." **Exhibit W**.

92. Similarly, in an interview with *MIT Technology Review*, published on February 3, 2015, Elysium co-founder Guarente discusses the presence of NR and PT in Basis and touts, "[w]e expect a synergistic effect [from] combining them." **Exhibit X** (second alteration in original).

93. On information and belief, Elysium's false claims of the synergistic effect between NR and PT is again based on research concerning resveratrol, rather than research concerning PT. *See* **Exhibits X**, **Y**. Nevertheless, Elysium continues to boast that its product is "safe," "pure," and more effective because a synergistic effect exists, when it does not.

94. Elysium's false statements regarding the synergy between NR and PT are unsupported by scientific research and deceptively mislead consumers that Elysium's Basis product is superior to its competitors.

Basis Does Not Contain the Amount of Advertised NR

95. Elysium advertises that a dose of Basis contains 250 mg of NR. *See* **Exhibits G**, **Z**. However, testing of commercially available Basis revealed that as many as a third of Basis doses sold to consumers contain materially less NR.

96. On information and belief, the amount of NR in Basis is highly material to Elysium's customers. Elysium advertises that daily intake of a standard dose of 50 mg of PT and 250 mg of NR (the contents of Basis), may increase NAD+ levels by 40%. **Exhibits G**, **Z**.

Consumers are led to believe that they will achieve certain results with a recommended dose of Basis, when they may need far more Basis to receive the recommended amount of NR.

97. On information and belief, Elysium fails to conduct adequate testing to ensure that its new ingredients contain consistent amounts of NR, were as potent as advertised, and were stable after production.

Elysium Introduces High Levels of a Carcinogen Into Basis

98. Elysium has marketed itself as having a mission "different from anything else in the market." **Exhibit DD**. Part of what would set Elysium apart is "set[ting] a new standard for quality and purity for consumer products." **Exhibit EE**; *see also* **Exhibit G**. According to Elysium's CEO, Eric Marcotulli, "[c]reating Basis was contingent" upon "develop[ing] the supply chain so that we have the highest quality material possible and in the purest form possible." **Exhibit P**. "This is important," according to Marcotulli, "because if you want to deliver a positive health benefit to customers, you need to deliver a reliable product to them each and every month." *Id.* Marcotulli has claimed that Elysium had "in place" the supply chain and reliable product. *Id.*

99. Elysium's high-minded public representations are false. Instead of adhering to cGMP or ensuring it was selling "the highest quality material possible," Elysium cut corners to chase profits, forcing its manufacturer to deliver product as quickly as possible without completing the purification process. Elysium's direction to its manufacturer caused high levels of acetamide, a known carcinogen, to be present in Basis shipped to consumers.

100. As described in paragraph 55 above, Elysium obtained a stockpile of NR and PT from ChromaDex in 2016, and planned to use the profits from selling those ingredients to help finance the development of a new commercial supply of NR, independent of ChromaDex (and in violation of ChromaDex's intellectual property rights).

101. Elysium initially set a safety specification for NR pursuant to which the maximum acceptable amount of acetamide was 40 parts per million ("ppm").

102. However, in mid-2017, Elysium was informed that the NR of its new manufacturer had levels of acetamide over 40 ppm, and that the new manufacturer was still developing an additional step in the manufacturing process to meet Elysium's safety specification.

103. With its stockpile of ingredients from ChromaDex dwindling, Elysium decided that rather than wait for the additional purification process, it would dramatically loosen its safety specifications by raising the permissible level of acetamide to 200 ppm, a five-fold increase, and directed the manufacturer to "pull the NR[] batch from the reactor."

104. When testing showed the batch contained over 200 ppm of acetamide, Elysium once again loosened its own safety specification, this time to 275 ppm, so that it could accept and sell to consumers NR with high levels of acetamide.

105. Elysium, however, faced a conundrum. Pursuant to its Proposition 65, California, the largest market, requires that a finished product that would expose a person to more than 10 micrograms of acetamide a day (which Elysium and its manufacturer translated to approximately 40 ppm) prominently display a warning that notifies consumers that the product contains chemicals known to the State of California to cause cancer. To avoid the labeling requirement, Elysium deliberately sold Basis with NR supplied by ChromaDex into California and shipped Basis made with the high-acetamide NR from its new manufacturer into the rest of the country, including New York.

106. Thus, contrary to Elysium's claim that it had in place a supply chain for "the highest quality material possible and in the purest form possible," Elysium was shipping product that violated even its own safety restrictions and did not come close to meeting ChromaDex's quality control and safety parameters.

Elysium Makes Unsubstantiated Cancer and Disease Prevention, Cognitive Benefit, and Longevity Claims

107. Not only was Elysium shipping product with high levels of a known carcinogen, it was *actively promoting* the PT in Basis as a supplement that could prevent or treat serious disease, including cancer, Alzheimer's, heart disease, and diabetes; reverse cognitive decline; and increase human life span. **Exhibit FF**. None of those claims are supported by science.

108. The claims appeared in the "Science 101: Explore the science behind our product" area of Elysium's website, in the format of an article titled "What is Pterostilbene?," and include that PT, and by extension, Basis, may: prevent liver, skin, and colon cancer; enhance the effectiveness of chemotherapy; reverse cognitive decline; and extend a human user's lifespan and prevent aging by, among other things, activating a gene that "plays a pivotal role in aging, including in DNA repair." *Id.*

109. The Federal Trade Commission ("FTC") has made clear that such claims must be supported by competent and reliable scientific evidence. Elysium fails to provide any such evidence or human clinical data to support its claims. Elysium could not possibly do so given the present state of the relevant science.

110. As explained above at paragraphs 83-86, neither stated premise underlying Elysium's claims—that resveratrol can deliver anti-aging and disease prevention benefits or that PT can deliver benefits once thought to be associated with resveratrol, a close molecular cousin to PT—is supported by science.

111. Elysium not only doubles down on resveratrol's claimed benefits, but goes a step further and states that the reason "resveratrol hasn't lived up to its initial promise," is that "it disappears from the body in roughly 15 minutes—meaning, in scientific terms, it isn't very bioavailable." *Id.* Elysium asserts that because PT has better bioavailability than resveratrol, PT will do everything that it was hoped resveratrol would do. *Id.* ("Pretty much everything you know about resveratrol is true for pterostilbene, Dellinger says. Only it's more potent."). In other words, Elysium continues to tout resveratrol's debunked health benefits, and claims that Basis solves resveratrol's bioavailability problems.

112. However, the claim that PT is materially more potent than resveratrol from a bioavailability standpoint is unsupported by the relevant clinical studies, which show only slightly better bioavailability in PT and no evidence that this minor increase has positive health outcomes.

113. Further, compounding the misleading and unsubstantiated claims promising extraordinary heart disease benefits is the fact that actual human clinical studies, including Elysium's own study, have shown that PT, an active ingredient in Basis, elevates LDL cholesterol on a dose-dependent basis. *See* **Exhibits AA**, **BB**.

114. Elysium's own research shows that daily administration of NR plus PT (which comprise Basis) produces a statistically significant increase in total cholesterol driven entirely by increased LDL cholesterol. **Exhibits AA**, **BB**. Yet, Elysium claims that Basis has no known negative side effects and is "one of the safest products we've ever seen." **Exhibit GG**.

115. LDL cholesterol leads to a buildup of cholesterol in arteries and high levels of LDL raise the risk of coronary artery disease and may lead to heart attacks. Increased levels of LDL, therefore, present serious health risks for consumers, including the increased risk of cardiovascular disease (a leading cause of death in older Americans).

116. The consumer testimonials from Elysium's own website show the misleading effect the claims have on consumers, especially when combined with the false veneer of scientific credibility created by Elysium's stacking of its "Scientific Advisory Board" with a blue ribbon panel of Nobel laureates and touting its connections to academic and research institutions. *See, e.g.*, **Exhibit HH**.

117. Elysium's advertisements contain affirmative misrepresentations and dupe consumers into believing not only that Basis is "safe," "pure," and the result of processes that "prioritize quality, safety, and efficacy," *see* **Exhibit CC**, but that the PT in Basis can treat or prevent serious disease.

118. Egregiously, as with other claims on Elysium's website, the "Science 101" advertisement promoting PT's unsubstantiated benefits is combined with prominent marketing text imploring consumers to "BUY NOW," and "Share free Basis with friends." **Exhibit FF**.

CLAIMS

FIRST CLAIM
FALSE ADVERTISING UNDER 15 U.S.C. § 1125(a)

119. ChromaDex repeats and re-alleges the allegations contained in the paragraphs above, as if incorporated herein.

120. Elysium actively seeks to confuse consumers by claiming to be "first" to market and by claiming that its Basis product is the only supplement clinically proven effective. Indeed, Elysium provides consumers with the false impression that it was materially involved in the research and science behind the ingredients in Basis, when it was not, and creates a false impression of safety, efficacy, and governmental review, including but not limited to, by creating implied endorsements by highly regarded medical professionals and associating with world-class institutions, when in actuality neither of these groups is actively involved in researching, monitoring, or ensuring the safety of the Basis product itself. Additionally, Elysium falsely claims that the FDA has approved or endorsed Basis by referring to NDINs and a GRAS finding submitted by ChromaDex.

121. Specifically, Elysium's marketing, advertising and promotional statements and activities are false and misleading representations of fact and confuse consumers in New York and across the country into believing that its current Basis product (a) is the only supplement clinically proven effective; (b) is the result of extensive scientific research and development conducted by Elysium; (c) is manufactured subject to an NDIN; (d) has been approved or endorsed by the FDA and is Generally Recognized As Safe; (e) has been clinically tested for safety and efficacy; (f) has been endorsed by a multitude of renowned scientists and academic institutions; (g) is superior because there is a synergistic effect between its active ingredients; (h) contains 250 mg of NR; (i) can prevent or treat serious disease, reverse cognitive decline, and increase human life span; and (j) is "safe" and "pure." Further, Elysium's claimed license of NR intellectual property is intentionally deceptive and misleading to consumers. None of the foregoing is true, and consumers

are likely to rely upon those false, misleading, and deceptive statements, all to their detriment and the detriment of ChromaDex and its Niagen and Tru Niagen products.

122. Elysium's false and misleading marketing and advertising relate to aspects of its product which are material to consumers, including the safety, efficacy, and purity of its product, and the science and testing supporting Elysium's claims. These false and misleading statements are, accordingly, likely to influence the purchasing decisions of consumers.

123. Elysium's false and misleading marketing and advertising have likely caused, and will continue to cause, significant injury to ChromaDex in the form of declining sales, loss of goodwill, and by damaging ChromaDex's brand by deceptively adopting ChromaDex's pedigree as its own.

124. Elysium's product is sold in multiple states and travels in interstate commerce. *See, e.g.*, **Exhibits E**, **R**, **S**, **T** (reflecting sales in four different states).

125. Elysium is therefore engaged in false advertising in violation of 15 U.S.C. § 1125(a), which prohibits a party from "misrepresenting the nature, characteristics, [or] qualities" of a product in "commercial advertising or promotion." Elysium misrepresents the nature, characteristic, and qualities of the Basis supplement in violation of the law, causing ChromaDex and consumers alike irreparable harm for which ChromaDex has no adequate remedy at law.

SECOND CLAIM
FEDERAL UNFAIR COMPETITION UNDER 15 U.S.C. § 1125(a)

126. ChromaDex repeats and re-alleges the allegations contained in the paragraphs above, as if incorporated herein.

127. ChromaDex is the only supplier of NR ingredients and products in the United States (1) with an NDIN filed with the FDA; (2) which has successfully notified the FDA that its products have been confirmed to be GRAS; and (3) which has clinical trial support related to NR. Although Elysium was not involved in the research and testing of NR, it claims to be "first" to market and touts the safety of its current Basis product based on research conducted by ChromaDex or using ChromaDex's ingredients. In fact, Elysium's current Basis product has not undergone the testing

required to make these statements and thus consumers in New York and across the country are likely to be confused by this information. Elysium even goes so far as to make statements suggesting it is a discovering or pivotal party in the NR field, when it is not, and statements that its product can prevent or treat serious disease, reverse cognitive decline, and increase human life span.

128. Elysium's false and misleading marketing and advertising relate to aspects of its product which are material to consumers, including the safety, efficacy, and purity of its product, and the science and testing supporting Elysium's claims. These false and misleading statements are, accordingly, likely to influence the purchasing decisions of consumers.

129. Elysium's false and misleading marketing and advertising have likely caused, and will continue to cause, significant injury to ChromaDex in the form of declining sales, loss of goodwill, and by damaging ChromaDex's brand by deceptively adopting ChromaDex's pedigree as its own.

130. Elysium's product is sold in multiple states and travels in interstate commerce. *See, e.g.*, **Exhibits E**, **R**, **S**, **T** (reflecting sales in four different states).

131. Elysium is therefore engaged in unfair competition in violation of 15 U.S.C. § 1125(a) and has caused ChromaDex irreparable harm for which ChromaDex has no adequate remedy at law.

THIRD CLAIM
DECEPTIVE PRACTICES UNDER NEW YORK GENERAL BUSINESS LAW § 349

132. ChromaDex repeats and re-alleges the allegations contained in the paragraphs above, as if incorporated herein.

133. By the acts described herein, Elysium has engaged in deceptive acts and practices directed at consumers in the conduct of its business by disseminating misleading information to induce the purchase of a harmful product injuring both New York consumers' financial well-being and personal health and safety, in violation of New York General Business Law § 349(h). *See, e.g.*, **Exhibit E** (reflecting consumer of Basis located in New York).

134. Elysium's acts alleged herein have caused monetary damages to ChromaDex in an amount to be proven at trial in excess of $75,000.

135. Elysium's acts have caused, and will continue to cause, irreparable injury to ChromaDex and its business and reputation unless and until Elysium is permanently enjoined.

PRAYER FOR RELIEF

ChromaDex prays that:

A. Elysium, its employees, representatives, and agents be enjoined from making false and/or misleading statements about the efficacy, safety, and purity of its Basis (or any other) supplement;

B. Elysium be ordered to cease and desist from selling its Basis product unless or until the product is compliant with applicable federal and state laws and regulations;

C. Elysium be ordered to publish for a period of not less than twelve months corrective advertising in all media cogently explaining that (1) Basis is not the subject of a filed NDIN or a successful GRAS submission to the FDA; (2) Elysium and Guarente were not involved in the development of the science behind NR; (3) the compounds used in both of its clinical studies were purchased from ChromaDex and that those ingredients are no longer used in Basis; (4) Basis was not the first NR supplement to market and was not the first NR supplement clinically proven effective; (5) Elysium does not hold a license to a patent covering uses of NR; (6) Elysium's scientific advisors were not involved in the development or testing of Basis and do not vouch for its safety or efficacy; (7) there is no clinical support for Elysium's claims that Basis can prevent or treat cancer, reverse cognitive decline, or extend human life span; (8) Basis creates a risk of causing a substantial increase in LDL-C in consumers; (9) Basis capsules may not contain the stated amount of NR; and (10) certain bottles of Basis contain a high amount of acetamide;

D. The Court grant any and all relief to which ChromaDex may be entitled pursuant to the Lanham Act, 15 U.S.C. §§ 1051, *et seq.*, and New York General Business Law § 349, including but not limited to treble damages and attorneys' fees, in an amount not less than $200,000,000;

E. The costs of this action be taxed against Defendant; and

F. The Court grant ChromaDex such other and further relief as the Court may deem just and proper.

DEMAND FOR JURY TRIAL

ChromaDex demands trial before a jury on all issues so triable.

Dated: February 27, 2020
New York, New York

LTL ATTORNEYS LLP

By: *s/ Joe H. Tuffaha*

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